#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

### CORRECTED VERSION

### (19) World Intellectual Property Organization International Bureau

# ' CHPO

### 

### (43) International Publication Date 28 April 2005 (28.04.2005)

### **PCT**

## (10) International Publication Number WO 2005/038356 Al

- (51) International Patent Classification7:
- F24H 9/16
- (21) International Application Number:

PCT/KR2004/001386

- (22) International Filing Date: 10 June 2004 (10.06.2004)
- (25) Filing Language:

Korean

(26) Publication Language:

English

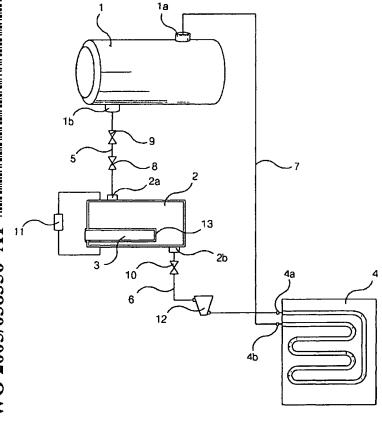
(30) Priority Data:

- 10-2003-0071615 15 October 2003 (15.10.2003) KR (71) Applicant (for all designated States except US): CNTEK,
- CORP. [US/US]; 806 Moris Tpke 4F, Short Hills, NJ 07078 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): RHO, Young-Bog [KR/KR]; 522-11, Gwanwon-ri, Seosu-myeon Gunsan-si, Jeollabuk-do 573-941 (KR). RHO, Young-Gyu [KR/KR]; 433, Maryong-ri, Seosu-myeon Gunsan-si, Jeollabuk-do 573-941 (KR).

- (74) Agent: PARK, Hyeong-Keun; Gain International Patent & Law Firm, 4th Floor, Woosung Bldg., 1571-14, Seocho 3-dong, Seocho-gu, Seoul 137-874 (KR).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,

[Continued on next page]

(54) Title: AUTOMATIC CIRCULATION DEVICE OF WARM WATER



(57) Abstract: An automatic circulation device of warm water includes a boiler respectively formed with a feed port and a discharging port at the upper side and the lower side thereof, an electric heater horizontally installed at the inner lower side of the boiler without contacting the inner lower side and supplying heat to the interior of the boiler, a water tank connected to the feed port of the boiler by means of a feed pipe and feeding the cool water to the boiler, a heat exchanging section connected to the discharging port of the boiler by means of a discharging pipe and to the water tank by means of a circulation pipe, and transferring heat to the exterior, and a feed valve and a discharging valve respectively installed to the feed pipe and the discharging pipe, and automatically opened and closed by vapor pressure in the boiler. The automatic circulation device continuously produces and circulates the warm water regardless of the distance and height without using a separate pump.

### WO 2005/038356 A1



SI, SK, TR), OAPI (BF, **BJ**, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

- with international search report
- (48) Date of publication of this corrected version:
  19 January 2006

(15) Information about Correction:
see PCT Gazette No. 03/2006 of 19 January 2006, Sec-

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.